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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,464	10/27/2003	Kenneth A. Stewart	CS23035RL/10-191	2512

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EXAMINER

TRAN, KHANH C

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/694,464	STEWART ET AL.	
	Examiner	Art Unit	
	Khanh Tran	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-18 is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-10, 19-22 and 26-29 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 23-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/27/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 9-10, 19-22 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sahai et al. US. Patent 7,027,534 B2.

Regarding claim 1, Sahai et al. invention is directed to techniques are provided for fine-tuning estimates of a delay value for a sampled signal. FIG. 1 illustrates a system 100 comprising a signal source S, a receiver H, and a server D.

In column 3 lines 10-35, the received signal is received and digitized at the receiver H. The digitized received signal is a sampled signal or sampled data.

In column 3 lines 45-60, Sahai et al. further teaches that the strength or likelihood of candidate delay values is evaluated either directly by the square-magnitude of the IQ correlations, I^2+Q^2 , or by comparing the IQ correlations with a template (template-matching method). The IQ correlations are standard In-phase and Quadrature correlations of the sampled signal with a suitably modulated reference signal representing the known signal being searched for.

Sahai et al. does not explicitly disclose processing the signal sample to suppress on channel interference and provide a processed sample.

However, as recited above, because the IQ correlations are standard In-phase and Quadrature correlations of the sampled signal with a suitably modulated reference signal representing the known signal, one of ordinary skill in the art at the time the invention was made would have recognized the correlation computation suppress in-band channel interference. Further as common knowledge of one ordinary skill in the art, the receiver H employs filters whose pass band operates on the received signals to reject off channel or out of band energy due to noise and adjacent channel interference; see also column 6 lines 1-11.

Regarding claim 2, as recited in claim 1 rejection, the IQ correlations are standard In-phase and Quadrature correlations of the sampled signal with a suitably modulated reference signal representing the known signal being searched for. In view of the foregoing, the received sampled signal has known properties.

Regarding claim 3, similar to claim 2 rejection, the IQ correlations are standard In-phase and Quadrature correlations of the sampled signal with a suitably modulated reference signal representing the known signal being searched for. In view of the foregoing, the received sampled signal has known quadrature phase relationship.

Regarding claim 4, in column 3 lines 55-65, Sahai et al. further teaches the second stage refines the approximate delay estimates by performing either an

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interpolation or finer template-matching operation in the neighborhood of these coarse estimates.

In column 12 lines 40-60, Sahai et al. further discloses that determining the one or more initial estimates of delay value further comprises the steps of: performing, if not already performed, a coarse-grained calculation of I and Q correlation integrals over a hypothesized range of delay values for a sampled data that is associated with the received signal. In view of the aforementioned disclosure, the hypothesized range of delay values for a sampled data that is associated with the received signal is selected based on the estimates of delay value associated with a received signal; see also column 11 lines 60-67. The step of performing, if not already performed, a coarse-grained calculation of I and Q correlation integrals over a hypothesized range of delay values for a sampled data corresponds to the claimed *"processing the received signal to provide a received signal estimate using the hypothetical delay, the signal sample, and the predetermined sample"*.

Still further in column 12 lines 40-60, calculating magnitude values corresponding to the coarse-grained calculations of I and Q correlation integrals over the hypothesized range of delay values and selecting one or more delay values that correspond to magnitude values that are above a pre-selected threshold magnitude value as the one or more initial estimates of delay value. Hence, the foregoing teachings address the claimed step of "comparing the received signal estimate... and choosing the delay parameter ...".

Regarding claim 9, Sahai et al. does not disclose the receiver including a GSM receiver as claimed in the application claim.

In column 3 lines 25-35, Sahai et al. further suggests that receivers being GPS receivers, cell phones with embedded signal receivers, Personal Digital Assistants (PDAs) with embedded signal receivers. As known in the art that cell phones with embedded signal receivers can be implemented to operate in GSM system, therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made that Sahai et al. invention can be modified to operate as a GSM receiver.

Regarding claim 10, in column 5 line 50 via column 6 line 65, Sahai et al. teaches in the template-based approach based on the known IQ correlation integral shape, which is used to generate parameters of the template. In view of that, the the known IQ correlation integral shape corresponds to the claimed training sequence.

Regarding claim 19, claim is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 20, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 21, claim is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 22, claim is rejected on the same ground as for claim 4 because of similar scope.

Regarding claim 27, claim is rejected on the same ground as for claim 9 because of similar scope.

Regarding claim 28, claim is rejected on the same ground as for claim 10 because of similar scope.

Regarding claim 29, as recited in claim 9 above, Sahai et al. further suggests that receivers being GPS receivers, cell phones with embedded signal receivers, Personal Digital Assistants (PDAs) with embedded signal receivers.

2. Claims 8 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sahai et al. US. Patent 7,027,534 B2 as applied to claim 1 above, and further in view of Gordon et al. U.S. Patent 6,567,486 B1.

Regarding claim 8, Sahai et al. does not disclose the receiver receiving a GMSK modulated signal as claimed in the application claim.

Gordon et al. teaches wireless telecommunications utilizing different modulation in wireless TDMA system such as GSM, which uses GMSK modulation scheme; see column 4 lines 60-67. As recited in claim 9 above, Sahai et al. further suggests that receivers being GPS receivers, cell phones with embedded signal receivers, Personal Digital Assistants (PDAs) with embedded signal receivers. As known in the art that cell phones with embedded signal receivers can be implemented to operate in GSM system, therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made that Sahai et al. invention can be modified to operate as a GSM receiver receiving GMSK modulation signal.

Regarding claim 26, claim is rejected on the same ground as for claim 8 because of similar scope.

Allowable Subject Matter

3. Claims 5-7 and 23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. Claims 11-18 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 11, claim is allowable over prior art of record because the cited references cannot teach or suggest "*choosing the parameter that corresponds to a minimum difference value*".

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sahai et al. U.S. Patent 6,512,479 discloses "Signal Acquisition Using Data Bit Information".

Hoole U.S. Patent 5,875,208 discloses "Delay Compensation In A Discrete Multitone Spread Spectrum Communications System".

Siirtola et al. U.S. Patent 6,631,173 B1 discloses "Method And Arrangement For Calculating Correlation".

Laakso et al. U.S. Patent 5,930,289 discloses "CDMA Reception Method And A CDMA Receiver Which Calculates An Estimate From Samples For Each Desired Signal During A Monitoring Period".

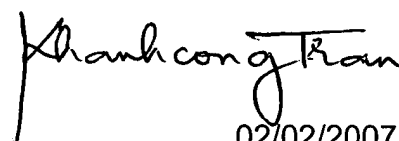
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT



02/02/2007
Khanh Tran
Primary Examiner